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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/883,363	06/19/2001	Ken Ogura	OKI.244	1079

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EXAMINER

NGUYEN, HA T

ART UNIT PAPER NUMBER

2812

DATE MAILED: 09/30/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/883,363

Applicant(s)

OGURA, KEN

Examiner

Ha T. Nguyen

Art Unit

2812

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 July 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) 1-16 and 22-24 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 17-21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 June 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Notice to Applicant

1. Applicant's election of group II, claims 17-21, without traverse in Paper No. 9 is acknowledged.

Claim Objections

2. Claims 17-21 are objected to because of the following informalities: in claim 17, before "resist", in lines 5, 7, insertion of --first-- , in lines 13, 15, insertion of --second--, and before "opening" in lines 8, 10, insertion of --first--, in lines 16, 18, insertion of --second-- are suggested for clarity . Appropriate correction is required.

Claims 18, 20, and 21 variously depend from claim 17 or 19, they are objected to for the same reason.

Claim Rejections - 35 USC § 112

3. Claims 17-21 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 17 recites the limitations "laminating a second insulating layer" and "laminating a third insulating layer" in lines 4 and 12, respectively. Claim 19 recites the limitations "forming an electrode pad serving as an input/output terminals" and "laminating a second insulating layer" in lines 3 and 4, respectively. It is not clear where these elements are located.

Claims 18, 20, and 21 variously depend from claim 17 or 19, they are rejected for the same reason.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 17-19 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Carey et al.(U.S. Patent 5075965, hereinafter "Carey") in view of Pang (U.S. Patent 6177329).

[Claims 17 and 19] Referring to Figs. 4-5 and related text, Carey discloses a method of fabricating an integrated circuit chip, comprising the steps of laminating a first insulating layer 14 on a board 10; forming an electrode pad 11 serving as an input/output terminal; forming a conductive post 35, 37 on the pad (See fig. 4). But Carey does not disclose expressly the process of forming the conductive post. However, the missing elements are well known in the art because Pang discloses a process of forming a conductive post comprising the steps of: laminating a second insulating layer 112; forming a first resist pattern 114 on the second insulating layer at a region excepting a part of the electrode pad 108; etching and removing the second insulating layer while the first resist pattern serves as a mask (see Fig. 5), thereby defining a first opening 118 in the second insulating layer on the electrode pad; filling the first opening with a conductive material layer 122 made of a conductive material; laminating a third insulating layer 14 (see Fig. 18); forming a second resist pattern 144 on the third insulating layer at a region excepting a region of the conductive material layer; etching and removing the third insulating layer while the second resist pattern serves as mask, thereby defining a second opening 148 in the third insulating layer at the region of the conductive material layer filling the second opening with a metal layer 150 made of an electric connection material; and etching and removing the third insulating layer and the second insulating layer (See fig. 24). A person of ordinary skill is motivated to modify Carey with Pang to obtain conductor of desired shape.

[Claims 18 and 21] Carey also discloses wherein the electric connection material is molten solder 37 (or 35)(see col. 6, lines 18-41).

Therefore, it would have been obvious to combine Carey with Pang to obtain the invention as specified in claims 17-19 and 21.

6. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Carey in view of Pang, as applied to claims 17-19, 21 above, and further in view of Stevens (U.S. Patent 6376374).

The combined teaching of Carey and Pang discloses substantially the limitations of claim 20, as shown above.

But the combined teaching of Carey and Pang does not disclose expressly wherein a tip end of the exposed conductive material layer is dipped in a liquid bath.

However, the missing limitation is well known in the art because Stevens discloses the use of electrochemical process to deposit a capping layer (See par. bridging cols. 5 and 6).

A person of ordinary skill is motivated to modify Carey and Pang with Stevens to obtain good protection of the conductor material.

Therefore, it would have been obvious to combine Carey and Pang with Stevens to obtain the invention as specified in claim 20.

Conclusion

7. The prior art relevant to the disclosure of this application and not being used in the rejections.

US Patent application 2002/0121692 for teaching the formation of columnar solder structure.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ha Nguyen whose telephone number is (703)308-2706 . The examiner can normally be reached on Monday-Friday from 8:30AM to 6:00PM, except the first Friday of each bi-week.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Niebling, can be reached on (703) 308-3325. The fax phone number for this Group is (703) 308-7722.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0956.



Ha Nguyen
Primary Examiner
09 - 26 - 02